



Deliverable D7.4

First batch of practice abstracts for end-users on new tools for emerging forest pests and diseases assessment and management

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 Lead beneficiary: **PENSOFT**
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 Partners contributing to the deliverable: **INRAE, PENSOFT**

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Dissemination Level	
PU Public	PU
CI Classified, as referred to Commission Decision 2001/844/EC	
CO Confidential, only for members of the consortium (including the Commission Services)	

Table of contents

1. Summary.....	3
2. Introduction.....	4
3. Practice abstracts	5
3.1. Practitioner's opinion on control and management methods for forest pests and diseases in Europe.	5
3.2. Decision tool for ranking pest and disease foci eradication efficiency and guidelines for eradication programmes	5
3.3. Planning future urban forests to minimize risks from invasive forest pests and diseases	6
3.4. Light-traps in shipping containers: a new tool for the early-detection of insect alien species.....	6
4. Conclusion	7

1. Summary

HOMED WP7 “Communication, dissemination and knowledge exchange” has as one of its main objectives the development of the project’s communication and dissemination strategy that will make the results of HOMED available to various stakeholder groups and the general public. As part of this strategy, innovative knowledge and easily accessible end-user material resulting from HOMED, along with project characteristics were planned to feed into the agricultural European Innovation Partnership (EIP-AGRI). As a result, four practice abstracts have been published on the EIP-AGRI platform, presenting project objectives, outcomes and recommendations that can be adopted into practice. The practice abstracts can be found on the [HOMED-dedicated page on the platform](#) as well as in the document below.

Objectives:

To represent the HOMED objectives to one of the key project target groups - practitioners, practical innovative solutions in the format of practice abstracts have been prepared and published on the EIP-AGRI platform.

Rationale:

EIP-AGRI’s aim is to foster a competitive and sustainable agriculture and forestry sector. It contributes to ensuring a steady supply of food, feed and biomaterials, and to the sustainable management of the essential natural resources on which farming and forestry depend, working in harmony with the environment. To achieve this goal, the EIP-AGRI brings together innovation actors (managers, advisors, researchers, businesses, NGOs, etc.) at the EU level and helps to build bridges between research and practice. The agriculture actors are invited to share innovative project ideas and practices, including project results, in the format of practice abstracts. A practice abstract is a short summary of around 1000-1500 characters, which describes a main information/recommendation/practice that can serve the end-users in their daily practice. The guidance, which was followed for these practice abstracts, as well as further explanatory text, is available on the EIP-AGRI web site (<http://ec.europa.eu/eip/agriculture/en/content/eip-agri-common-format>).

In order to place HOMED on the EIP-AGRI platform and provide the first batch of practice abstracts, the requested table sheet with metadata was prepared, including partner and project information. Additionally, a short consent form was filled in by each partner, due to the requirements introduced in the GDPR (General Data Protection Regulation) that prompts a clear consent to use the provided data on the EIP-AGRI website.

HOMED partners were provided with easy-to-use instructions, templates and examples to enable them to provide practice abstracts in the right format. Up to this point, four abstracts have been published by EIP-AGRI. Each further practice abstract, developed by HOMED researchers will enhance the collection of abstracts and will be updated on the [HOMED project-dedicated page in EIP-AGRI](#).

2. Introduction

To ensure that all the administrative requirements of the EIP-AGRI platform are fulfilled, a list of all HOMED partners' personal data was prepared, along with a consent form (Fig. 1), allowing the usage of these contact details for dissemination through the EIP-AGRI platform.

Consent Form

Full name:

Email:

By checking this box, you confirm that you have read the PRIVACY section of the EIP-AGRI template (see below).

By checking this box, you agree to let HOMED publish your information (as provided above) on the EIP-AGRI website.

PRIVACY *

**As specified in the original EIP-AGRI Template, available to view and download here:*
<https://ec.europa.eu/eip/agriculture/en/eip-agri-common-format>

+

INFORMATION ON USE OF PERSONAL DATA COLLECTED VIA THIS TEMPLATE
The project information provided with this template - thus including the contact details of the project coordinator and the project partners when these are provided - will be made publicly available on the EIP-AGRI website (https://ec.europa.eu/eip/agriculture/en). Visitors of the EIP-AGRI website may use this information to establish contacts with the project to, for example, propose collaborations and expand their network.
By submitting this template to the email account AGRI-EIP-PRACTICE-ABSTRACTS@ec.europa.eu the project coordinator and the project partners listed in the template are aware that the information provided in the template (including contact details when these are indicated) will be published on the EIP-AGRI website.
The acquisition of personal data through this template and their further processing are limited to the objectives and the operations described by the Privacy statement covering the activities of the EIP-AGRI Network, which is available at the following link: https://ec.europa.eu/eip/agriculture/en/privacy-statement-processing-personal-data-related
In case you have questions related to the collection and processing of your personal data, the general rules for processing of personal information in the context of the EIP-AGRI network activity, or on your rights to have it modified, corrected or deleted, please contact agri-EIP@ec.europa.eu
Giving consensus for publishing contact details of the project coordinator and partners
Under the sections PROJECT INFORMATION and PARTNERS of this template, project coordinators and their partners are asked to provide their contact details and express their agreement to publish them on the EIP-AGRI website. <u>The consent for publication is given by ticking the related consensus checkbox next to each partner's name.</u>
ATTENTION: <u>The project information provided with this template will be published on the EIP-AGRI website only if consensus for the publication of the contact details is provided through the procedure described above.</u>

Figure 1 - Consent form.

3. Practice abstracts

To ensure consistent presentation of all practice abstracts, instructions, templates and examples were sent to HOMED project partners. Based on the practical outputs and solutions obtained in HOMED, as well as the requirements of EIP-AGRI, project partners developed four practice abstracts, which can be found below.

3.1. Practitioner's opinion on control and management methods for forest pests and diseases in Europe

HOMED conducted a survey of more than 240 practitioners across Europe to learn more about their practices and needs in terms of tools and methods for the detection and identification of invasive forest pests and pathogens.

They suggested developing or improving the following methods of surveillance:

- Broad-spectrum traps to detect non-native insect pests in containers transporting live plants or wood packaging
- Drones to monitor forest defoliation.
- Smartphone applications and citizen science programmes to help detect new invasive pest of pathogens on trees (incl. in urban settings)
- Posters informing a wide audience of the risks of transporting tree pest contaminated material in airport lobbies and garden centers.
- Continuous training of personnel in charge of forest surveillance on new detection and identification techniques.

They suggested developing or improving the following methods of management:

- Use of locally sourced trees and tree seeds to avoid imports.
- Use of quarantine areas for imported plants for planting.
- Reinforced inspection of exported trees, imported trees and newly planted trees.
- Development of mixed species forests that are more resistant to invasion
- Fumigation procedure of imported potted trees, according to local legislation.

3.2. Decision tool for ranking pest and disease foci eradication efficiency and guidelines for eradication programmes

When non-native invasive pest or pathogens of trees are first detected on a new site, forest managers and practitioners are faced with difficult decisions. The first one is whether or not to attempt eradication action. And if so, which methods should be used.

But these questions must be answered quickly, as the effectiveness of eradication depends on the responsiveness of practitioners. The longer the wait, the higher the costs and the greater the probability of failure. Indeed, the probability of establishment of a population of invasive species increases with its size and geographical extent.

A new decision tool will be created, in the form of a decision-tree, based on scores, that is easy to implement. The tool will enable prioritization of decisions on eradication strategies, based on several decision criteria, such as: i) hazards intensity or frequency and likelihood of exposure to hazard, ii) probability of detection and monitoring precision, iii) invasive species biological traits, iv) host tree species traits, v) available control

strategies, vi) area and landscape affected. The overall integration of scores or decision equations, to be defined, will determine a decision. Guidelines on eradication methods will be also presented.

3.3. Planning future urban forests to minimize risks from invasive forest pests and diseases

A massive urban forestry project has been initiated and will eventually cover over 600 km² by 2030, providing 30% forest cover in a 2000 km² area 120 km southwest of Beijing in a new development zone called the Xiongan New Area (XNA), which will serve as the second capital of China. 100 km² have been already planted in a network of parks and landscaped green areas. Using science to inform policy, one major goal of the tree planting program was to make urban forests more resistant and resilient to potential invasive species threats. To accomplish this best management practice, planted tree species were carefully selected, existing established pests were delineated, and potential new forest invasive species of concern threatening the new area were identified. The framework for the invasive pests management strategy was based on a “big data” approach, with each tree receiving a QR code to facilitate real time monitoring and mapping of pests and diseases, coupled with a decision system to implement appropriate control methods. This new approach to urban forestry has the potential to become an exemplary model for urban forestry planning, by integrating forest health surveys and pest control operations with sustainable forestry management.

3.4. Light-traps in shipping containers: a new tool for the early-detection of insect alien species

Insects are one of the most successful groups of non-native invasive species, and the number of new introductions has been increasing in the last decades. Insect invasions are favored mainly by the increase in international trade, as most of them travel across the world inside shipping containers. For this reason, the interception of hitchhiker insects transported inside containers is one of the most important actions to prevent the introduction of new alien species. The effectiveness of sticky light traps was tested for the interception of pests inside the containers during shipment using four model species: *Cadra cautella* (Lepidoptera: Pyralidae), *Drosophila melanogaster* (Diptera: Drosophilidae), *Sitophilus zeamais* and *Ips typographus* (Coleoptera: Curculionidae). This trap consists in a carton box made attractive by a white LED light powered by a long-life AA battery. We found that light has a positive effect for the capture of *C. cautella* and *D. melanogaster*: in fact, activated traps (with light on) captured significantly more than control traps (with light off). Moreover, the number of captures for these two species was similar in both empty and full containers. Instead, Coleoptera (*S. zeamais* and *I. typographus*) were rarely caught, probably because of their ability to escape from traps. Finally, results show that increasing trap density in the container (from 1 to 8) increases the probability of insect capture. Given the results, we conclude that sticky light traps can be an effective tool for the early-detection of alien insect species travelling inside container, but they need some improvements. We suggest increasing the effectiveness of the trap by adding a stronger glue to reduce insect escape from traps. Finally, another possible improvement deals with the use of different color lights (i.e. wavelength) that can increase the attractiveness of the trap to a larger number of species.

4. Conclusion

HOMED will continue to submit practice abstracts on an ongoing basis, as they arise in relation to the publication of important research findings. A reminder about this important opportunity to disseminate research will be included in the regular monthly dissemination reminders. The progress of the HOMED collection on EIP-AGRI will be reported once again at the end of the project in D7.9 Second batch of practice abstracts for end-users on new tools for emerging forest pests and diseases assessment and management.